Control Valves

Series KD20

DESCRIPTION

Manufactured under ISO 9001 quality assurance system, the KD20 series is a top entry globe valve style body construction with a wide range of different single stage trims available. KD20 series combine the advanced modular design and the wide range of actuators to satisfy the needs of the industrial demand.
KD20 valves are designed to control a broad variety of fluids, like steam, water, most of the medium and gases.
One of the main features of this serie is the top guided construction that assure a stable plug travel over entire stroke of the valve minimizing vibration and wear.

DESIGN FEATURES

From DN15 to DN200
Top Guided std construction to ensure plug stability
Modular design
CEI EN 60534-6-1 clamp and Yoke seal
Std. Self adjusting double packing spring loaded
Shutoff capabilities : Class IV (Std), V, VI

OPTIONS :

Reduced area trim to provide wide capabilities for all sizes
Hardened trims to handle high pressure drop applications.
Balanced trims to handle high pressure drop & shutoff
"Quick-Change" seat ring
Low noise & anticavitation design cage
Bellows seal to meet zero emissions (ZEB20)
Extended bonnet for low temperature
Finned bonnet for high temperature
Full St.Steel actuator construction
Available accessories : positioners, position trasmitter,
NACE 0175/2003 or ISO15156 Construction on request
Butt Welding ends / Socket Welding ends
Heating jacket.

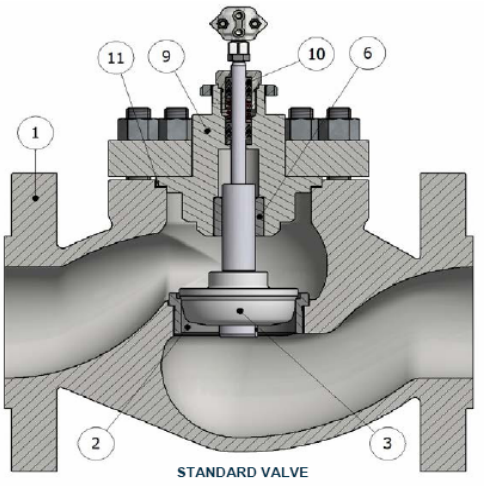
REFERENCE STANDARDS

Quality system management certification	ISO 9001
Design std.	EN12516-2
Flange connection	EN 1092-1
Socket-Welding Ends	EN 12760
Buttwelding Ends	EN 12627
Pressure Rating	PN16 / PN40
Face to face dimension	EN 558-1
Seat tightness Class	IEC 60534-4
Positioner mounting	CEI EN 60534-6-1
2014/68/EU (PED) Certification	Modulo B + C2
Mechanical resistance calculation method	UNI EN 12516-2
Hydrostatic pressure test	EN 12266-1
Pressure / Temperature relationship	EN 1092.1
2014/34/EU (ATEX) Conformity	II 2 G Ex h IIC T6...T1 Gb II 2 D Ex h IIIC T6...T1 Db
Non-electrical equipment for explosive atmospheres Basic method and requirements	EN ISO 80079-36
Satefy Integrity Level (SIL)	IEC EN 61508
Satefy Integrity Level (SIL) Approval	SIL 3 - (C–IS–722133629)
Fuggitive emissions Certification	ISO 15848-1
EAC Conformity	CU TR 010 / CU TR 032
NACE	MR0175

STD VALVE BODY CHARACTERISTICS	
Pressure rating - Design std.	PN63/PN100 - EN12516-2
Flange connection	EN1092,1 - raised face - phonography serrated 125-250 AARH
Face to face dimensions	EN 558-1

STD BODY & TRIM MATERIALS COMBINATION					
Valve body (1)	Bonnet (2)	Trim (2 and 3)	STUD	NUT	Body gasket (11)
Carbon steel A216 WCC	ASTM A105	ASTM A182 F316	A193B7	A194H2	Graphite+st. Steel
Stainless steel A351 CF8M	ASTM A182 F316	ASTM A182 F316	A193B8M	A194 8M	Graphite+st. Steel

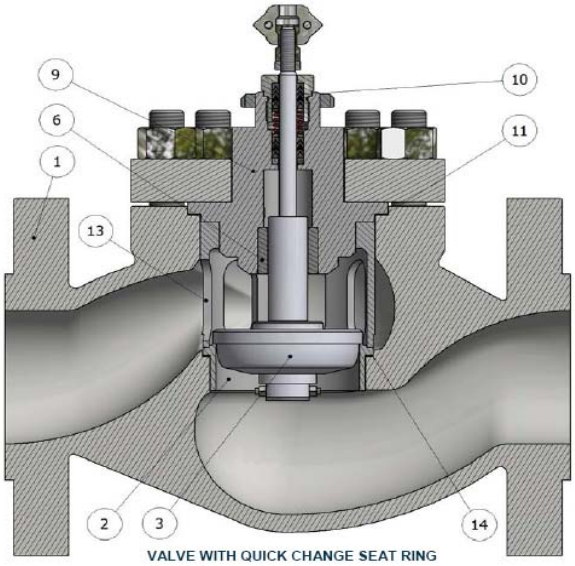
PARTS
1- Body Valve
2- Seat Ring
3- Plug
6- Top-guide stem
9 - Valve Bonnet
10- Stuffing box
11- Body gasket



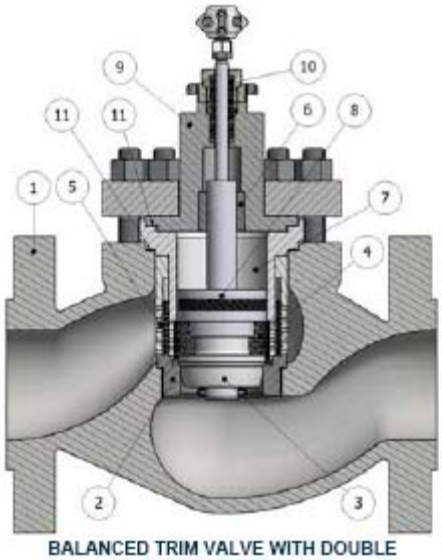
STANDARD VALVE

PARTS
1- Body Valve
2- "Quick Change" Seat Ring
3- Plug
6- Top-guide stem
9 - Bonnet
10- Stuffing box
11- Body gasket
13. Seat retainer
14. Seat gasket

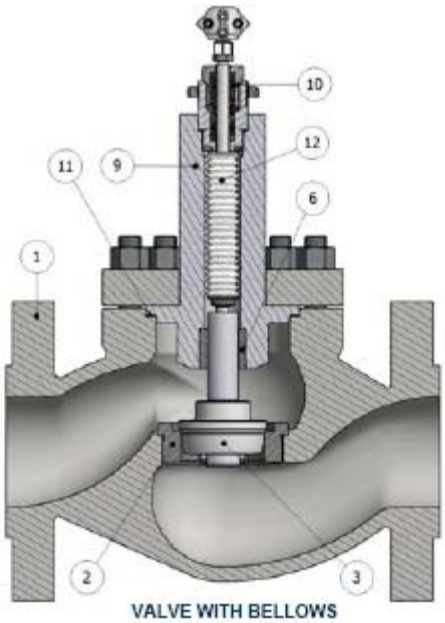
Unlike the standard seat, the "Quick-Change" seat(2) is not screwed up but is blocked by the part (13). This guarantees a quick field replacement without the use of special equipment.



VALVE WITH QUICK CHANGE SEAT RING

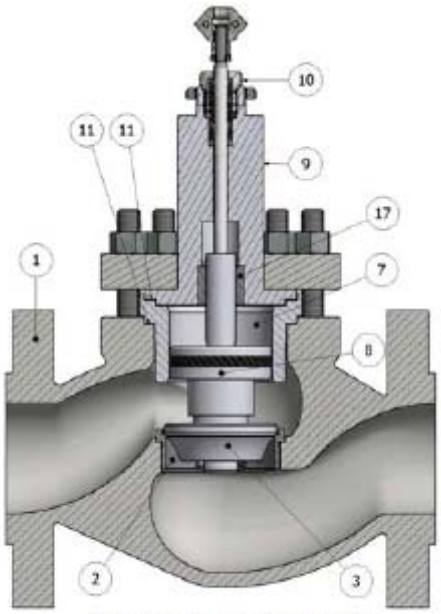


BALANCED TRIM VALVE WITH DOUBLE CAGE NOISE REDUCTION



VALVE WITH BELLOWS

PARTS
1- Body Valve
2- Seat Ring
3- Plug
4- 1st low dB / antcavitation cage
5- 2nd low dB / antcavitation cage
6- Top-guide stem
7. Balancing sleeve
8. Balancing piston
9 - Bonnet
10- Stuffing box
11- Body gasket
12. ZEB20 Bellows



BALANCED TRIM VALVE WITH EXTENDED BONNET

WORKING PRESSURE BY CLASS STD MATERIALS EN 1092-1

OPERATING TEMPERATURE	ASTM A105 / EN10273 1.0619 EN10273 1.0345 (-29° ÷ 450°C)		ASTM A216 WCC (-29°÷450°C)		A351 CF8M / EN10273 1.04408 A182 F316 / EN10272 1.4529 (-253°÷600°C)	
°C	PN63 (bar)	PN100 (bar)	PN63 (bar)	PN100 (bar)	PN63 (bar)	PN100 (bar)
RT	63.0	100.0	63.0	100.0	63.0	100.0
100	58.5	92.8	63.0	100.0	63.0	100.0
150	55.5	88.0	63.0	100.0	57.3	90.9
200	52.5	83.3	63.0	100.0	53.1	84.2
250	48.0	76.1	61.5	97.6	50.1	79.5
300	43.5	69.0	55.5	88.0	46.8	74.2
350	40.5	64.2	51.0	80.9	45.0	71.4
400	37.5	59.5	46.5	73.8	43.2	68.5
450	20.7	32.8	25.5	40.4	42.04	67.3
500	—	—	—	—	41.7	66.1
550	—	—	—	—	41.1	65.2
555	—	—	—	—	40.5	64.3
570	—	—	—	—	40.0	63.5
580	—	—	—	—	39.5	62.7
590	—	—	—	—	39.0	61.9
600	—	—	—	—	35.4	56.1

MATERIALS AVAILABLE ON REQUEST

Carbon steel	A352 LC2; A352 LC3; A352 LCC; A352 LCB
Alloy Carbon Steel	A217 WC6; A217 WC9
Austenitic Stainless Steel	A351 CF3; A351 CF8; A351 CF10; A351 CF3M; A351 CF8M; A351 CF10M
Ferritic Austenitic Stainless Steel (DUPLEX / SUPERDUPLEX)	A995 CD3MWCuN; A995 A6; A351 CK3MCuN; A351 CE8MC; A351 CD3MN; A351 CD4MCuN
Nickel Alloy Stainless Steel	A494 M35-1 (MONEL); A494 M35-2 (MONEL); A494 N-12MV (HASTELLOY B); A494 CW-12MW (HASTELLOY C)
TIE ROD & NUTS	In according to the body material

STANARD PROTECTIVE COATING

Working temperature	Valve body	Bonnet
from -20° to 302°F from -29° to 150°C	• Bicomponent anticorrosive acrylic primer at high resistance • Finish with bicomponent alphatic acrylic enamel RAL 7021 opaque	Electrolytic zinc coatings Fe/Zn 8 c1A UNI ISO 4520
from 302° to 482°F from 150° to 250°C	• Silicone primer • Finish with siliconic enamel RAL 9005	Electrolytic zinc coatings Fe/Zn 8 c1A UNI ISO 4520
from 482° to 752°F from 250° to 400°C	• Heat resistant siliconic primer • Finish with siliconic enamel RAL 9006	

PNEUMATIC ACTUATOR STANDARD PROTECTIVE COATIN

Casing and yoke
Polyester electrostatic epoxy powder coating RAL 7032

PROTECTIVE COATING ON REQUEST

Customer specification colours
Painting to sea environment
Painting according to ISO 12944
Painting according to Norskok M-501
Nace - Frosio painting

BONNET TYPES

STANDARD
-5°C to +200°C

FINNED
-5°C to +600°C

EXTENDED
-196°C to +220°C

PACKING TYPES FOR VALVES DN15 to DN100

L200

Series of energized V ring pack in virgin PTFE and FKM.
Application:
Oxygen and cryogenic
Self-adjusting and maintenance free

SP200

Series of energized V ring pack in virgin PTFE base & FKM 75 Shore.
Suitable for low and medium temperature
Self-adjusting and maintenance free

HP300

Directly in contact with the medium. Energized V ring pack in graphite anf PTFE. Used in high temperature applications
Self-adjusting and maintenance free

ECOPACK 1

Series of energized V ring pack in graphite/ PTFE. ISO 15848-1
Certified for Low emission fugitive test.
Self-adjusting and maintenance free

PACKING/BONNET TEMPERATURE RELATION

Type	LP200	SP200	HP300	ECOPACK 1
Cryogenic bonnet	-196°C to +180°C			-196°C to +180°C
Extended bonnet	-90°C to +180°C	-90°C to +220°C		-90°C to +220°C
Standard bonnet	-5°C to +180°C	-5°C to +220°C		-5°C to +220°C
Finned Bonnet		-5°C to +260°C	-5°C to +400°C	-5°C to +400°C
Extended finned bonnet			-5°C to +600°C	

PACKING TYPES FOR VALVES DN125 to DN200

L400

SP400

HP600

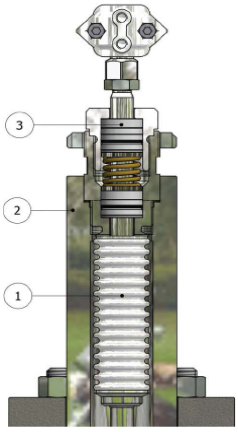
ECOPACK 2

PACKING/BONNET TEMPERATURE RELATION

Type	LP400	SP400	HP600	ECOPACK 2
Cryogenic bonnet	-196°C to +180°C			-196°C to +180°C
Extended bonnet	-90°C to +180°C	-90°C to +220°C		-90°C to +220°C
Standard bonnet	-5°C to +180°C	-5°C to +220°C		-5°C to +220°C
Finned Bonnet		-5°C to +260°C	-5°C to +400°C	-5°C to +400°C
Extended finned bonnet			-5°C to +600°C	

ZEB20 BELLOWS FOR DANGEROUS FLUIDS

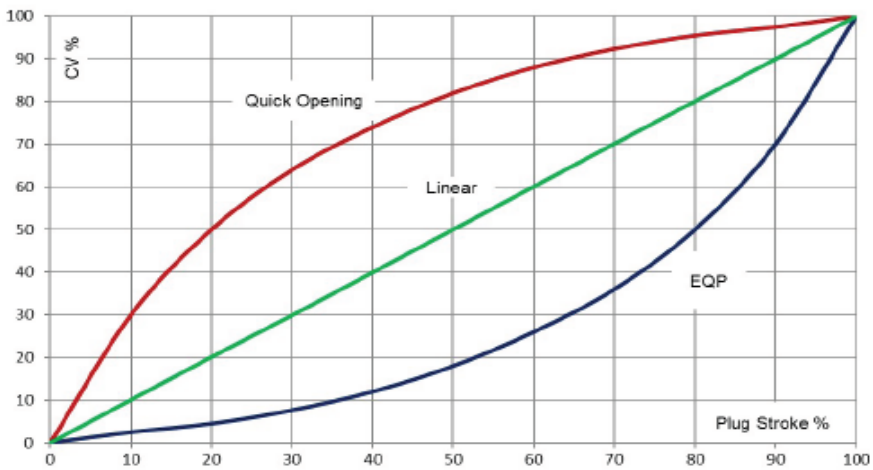
- ZEB20 is especially designed for industrial applications where the possible leakage process fluid from the packing can cause environmental or personal damage and in extreme case be hazardous to health.
- The ZEB20 is manufactured by welding a bellows to the plug stem and the valve bonnet. This removes potentail leakage paths, while allowing full movement of the stem. The design provides total isolation of the fluid from the outside environment.
- The ZEB20 also includes secodary stem seals as a safety function. These only operate in the unlikely event that a bellows ruptures. The secondary seals will provide reduced risk.
- The standard of the bellows material is AISI 316L, but it is also available in other materials, including inconel, monel, hastelloy, etc.
- For safety critical applications the ZEB20 can be fitted with a test



ZEB20 MATERIALS COMBINATION

POS.	DESCRIPTION	STD MATERIALS	ON REQUEST
1	Bellows	AISI 316L	Inconnel, monel, Hastelloy, other
2	Bonnet	SP200/SP400	LP200/400 - HP400/600 -Ecopack 1/2

PLUG CHARACTERISTICS



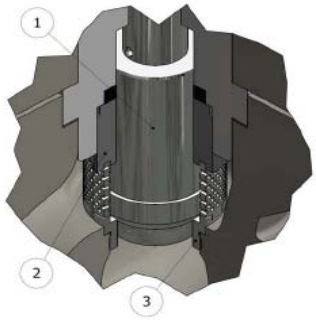
TRIMS CHARACTERISTICS		
	Standard	On request
Control characteristics	Equal percentage (EQP)	Quick opening (On-off)
		Linear (PL)
Port	Full port	Reduced port
		Microflow port
Seal	Metal seat tightness Class IV	Stellite faced seat/plug Class IV
		Saline nitriding (QPQ) seat/plug Class IV
		PTFE soft seal < 150°C - Class VI
		PTFE-GR soft seal < 190°C - Class VI
		PEEK soft seal <280°C Class VI

LINEAR SPLINE PLUG	QUICK OPENING PLUG	EQP PLUG METAL TIGHTNESS	EQP PLUG SOFT TIGHTNESS




To ensure the best peeformance with high pressure drop, the diameter of the top guided plug of the KD20 is equal or higher to the seat bore.

1	Balancing plug
2	Fukk guide stem
3	Sear ring

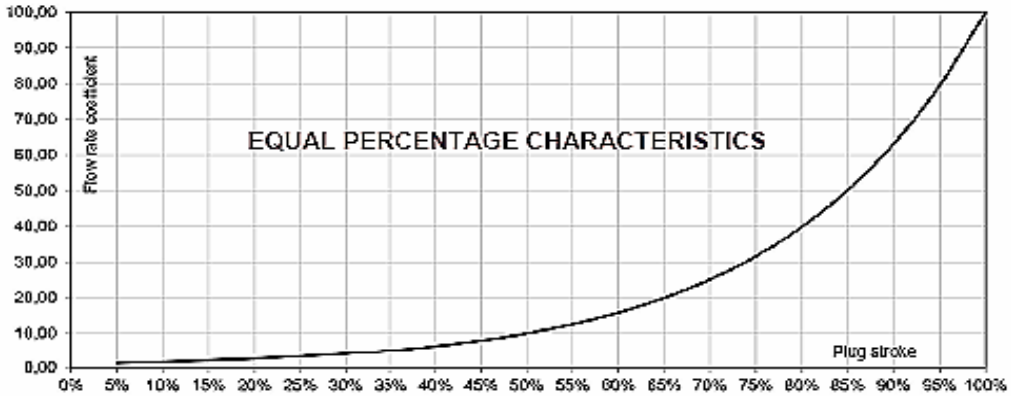


CAVITATION, FLASHING EFFECT, NOISE LEVEL


Anticavitation Cage


Low dB Trim single stage


Low dB Trim double stage



EQUAL PERCENTAGE PLUG FLOW RATE COEFFICIENTS - SEAT BORE DIAMETER AND STROKE

CV	Kv	Seat bore diameter	Std. Plug stroke	Valve size											
		mm	mm	15	20	25	32	40	50	65	80	100	125	150	200
0.08	0.07	3	20	c	o	o	o	o	c	—	—	—	—	—	—
0.20	0,17	4		o	o	o	o	o	c	—	—	—	—	—	—
0.60	0,51	5		o	o	o	o	o	c	—	—	—	—	—	—
1.00	0,85	7		o	o	o	o	o	c	—	—	—	—	—	—
1.3	1,11	8		o	o	o	o	o	c	—	—	—	—	—	—
1.8	1,54	9		o	o	o	o	o	c	—	—	—	—	—	—
2	1,7	10		o	o	o	o	o	c	—	—	—	—	—	—
2.5	2.15	10		o	o	o	o	o	c	—	—	—	—	—	—
3	2,58	10		o	o	o	o	o	c	—	—	—	—	—	—
3.5	3	10		o	o	o	o	o	c	o	o	—	—	—	—
5.5	4.7	20		■	o	o	o	o	c	o	o	o	—	—	—
8	6,8	20		—	■	o	o	o	c	o	o	o	—	—	—
13	11	25		—	—	■	o	o	c	o	o	o	—	—	—
19	16	30		—	—	—	■	o	c	o	o	o	o	c	—
29	25	38		—	—	—	—	■	c	o	o	o	o	c	o
50	43	49		—	—	—	—	—	■	o	o	o	o	c	o
75	64	64	30	—	—	—	—	—	—	■	o	o	o	c	o
112	96	76		—	—	—	—	—	—	—	■	o	o	c	o
173	148	100		—	—	—	—	—	—	—	—	■	o	c	o
190	162	100	35	—	—	—	—	—	—	—	—	o	o	c	o
270	231	126	50	—	—	—	—	—	—	—	—	—	■	c	o
410	351	151		—	—	—	—	—	—	—	—	—	—	■	o
720	615	201	60	—	—	—	—	—	—	—	—	—	—	—	■

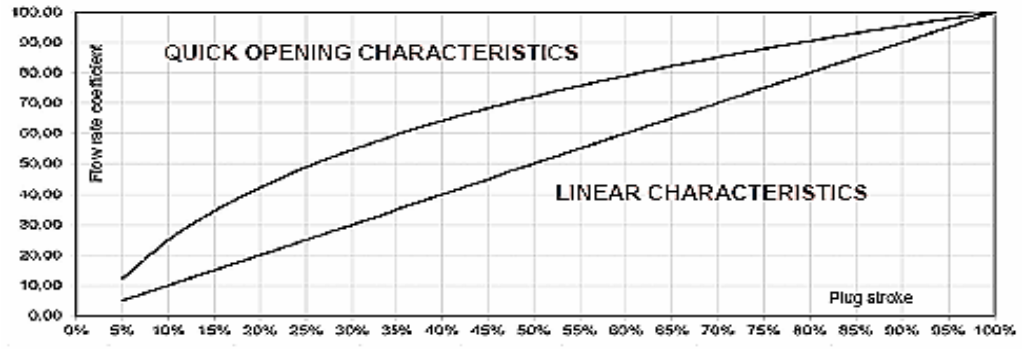
— not available ■ standard c on request

LINEAR AND QUICK OPENING PLUG FLOW RATE COEFFICIENTS - SEAT BORE DIA. AND STROKE

CV	Kv	Seat bore diameter	Std plug stroke	Valve size											
		mm	mm	15	20	25	32	40	50	65	80	100	125	150	200
0.03	0,02	3	20	c	o	o	c	o	o	—	—	—	—	—	—
0.05	0,04	3		c	o	o	c	o	o	—	—	—	—	—	—
0.08	0,07	3		c	o	o	c	o	o	—	—	—	—	—	—
0.20	0,17	4		c	o	o	c	o	o	—	—	—	—	—	—
0.60	0,51	5		c	o	o	c	o	o	—	—	—	—	—	—
0.75	0,65	6		o	o	o	c	o	o	—	—	—	—	—	—
1.00	0,85	7		o	o	o	c	o	o	—	—	—	—	—	—
1.3	1,11	8		o	o	o	c	o	o	—	—	—	—	—	—
1.8	1,54	9		o	o	o	c	o	o	—	—	—	—	—	—
2	1,7	10		o	o	o	c	o	o	—	—	—	—	—	—
2.5	2.15	10		c	o	o	c	o	o	—	—	—	—	—	—
3	2,58	10		c	o	o	c	o	o	—	—	—	—	—	—
3.5	3	10		o	o	o	c	o	o	o	o	—	—	—	—
6	5,1	20		■	o	o	c	o	o	o	o	c	—	—	—
8	6,8	20		—	■	o	c	o	o	o	o	c	—	—	—
13	11	25		—	—	■	c	o	o	o	o	c	—	—	—
19	16	30		—	—	—	■	o	o	o	o	c	o	o	—
29	25	38		—	—	—	—	■	o	o	o	c	o	o	c
50	43	49		—	—	—	—	—	■	o	o	c	o	o	c
75	64	64	30	—	—	—	—	—	—	■	o	c	o	o	c
112	96	76		—	—	—	—	—	—	—	■	c	o	o	c
173 [a]	148	100		—	—	—	—	—	—	—	—	■	o	o	c
190	162	100	35 [b]	—	—	—	—	—	—	—	—	c	o	o	c
280	239	126	50	—	—	—	—	—	—	—	—	—	■	o	c
435	372	151		—	—	—	—	—	—	—	—	—	—	■	c
720	615	201	60	—	—	—	—	—	—	—	—	—	—	—	■

— not available ■ standard o on request

a) not available for quick opening characteristic b) 30mm for quick opening characteristic



ACTUATOR CHARACTERISTICS

TYPE	diaphragm type - multispring
CONTROL SIGNAL	Direct Action (Air to close - valve normally open) 15-60 psi
	Reverse (Air to open - valve normally closed)
MAX AIR SUPPLY PRESSURE	87 psi (6 bar)
AMBIENT TEMPERATURE	-20÷70°C
YOKE AND CASING MATERIAL	Painted carbon Steel Fe410.1
BOLTS & NUTS	A193 B7 - A194 2H
DIAPHRAGM MATERIAL	NBR70
SPINDLE	ASTM 182 F304
VALVE CLAMP CONNECTION	ASTM A351 CF8
SPRING	EN 10270-1SH painted
PNEUMATIC CONNECTIONS	1/4"NPT-F
PROTECTIVE COATING	Finish powder coat polyesrer RAL 7032 (*)

other on request

ACCESSORIES

- Top mounted handwheel
- Pneumatic, Electropneumatic & Smart positioners
- I/P Converter
- 4-20 mA position feedback
- Alarm contacts
- Air filter regulator
- Solenoid valves
- Lock-up pneumatic device

1	Casing
2	Spring
3	Diaphragm
4	Spindle
5	Integral yoke
6	Valve clamp conn.
7	Stroke indicator
8	Diaphragm plate

MAXIMUM ADMISSIBLE PRESSURE DROP in BAR

ACTUATOR	THRUST kN	Signal (psi)	CV 5.5 CV 6.0		CV 8		CV 13		CV 19		CV 29		CV 50		CV 75		CV 112		CV 173		CV 190		CV 270 CV 280		CV 410 CV 435		CV 720	
			cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI	cl IV	cl VI
AP23	0.3	3÷15	14	18	14	18	9	12	5	8	3	4	2	3														
	0.4	6÷18	16	22	16	22	11	17	7	10	4	5	3	4														
	0.6	6÷30	22	28	22	28	16	25	10	15	6	8	4	6														
	1.5	15÷60	45	60	45	60	35	55	27	33	15	17	8	12														
AP28	0.6	3÷15	27	30	27	30	17	25	8	15	6	9	4	6														
	1.0	6÷18	38	40	38	40	21	30	13	19	10	12	5	8														
	1.2	6÷30	50	55	50	55	26	47	23	25	12	16	7	12														
	2.4	15÷60	80	90	80	90	48	75	40	55	25	38	17	23														
AP34 / AP35	1.2	3÷15	60	65	60	65	50	55	20	23	12	15	10	16	4	4	2	3	1	1								
	1.5	6÷18	80	85	80	85	60	65	30	35	15	18	12	15	6	7	4	5	2	3								
	1.9	6÷30	95	99	95	99	80	85	40	45	20	25	14	16	7	8	5	6	3	3								
	3.5	15÷60							82	85	36	45	25	25	11	13	8	11	6	8								
AP43 / AP44	2.8	3÷15									35	40	24	26	7	8	6	6	4	4								
	3.3	6÷18									40	45	26	28	9	10	8	8	5	5								
	3.8	6÷30									40	45	26	28	12	12	10	10	6	8								
	7.6	15÷60									65	85	40	70	28	37	22	27	15	17								
AP47	7.6	15÷60																			15	17						
AP45	7.6	15÷60									65	85	40	70	28	37	22	27	15	17								
AP48	7.6	15÷60																			15	17	7	8	5	6	3	4
AP51	15.5	15÷60															44	54	30	34	30	34	14	16	10	12		
AP53	15.5	15÷60																									6	8

cl. IV : metal seat tightness class IV - ANSI FCI 70.2 - IEC 60534-4
cl. VI : soft seal class VI - ANSI FCI 70.2 - IEC 60534-4
the pressure drop values must be used with in the body rating limit

DIMENSIONS

SIZE DN	A (mm)	B (mm)		G (mm)	C mm - Standard trim			C mm - Balanced trim		
		PN63	PN100		Std.	with bellows	Finned / Extended	Std.	with bellows	Finned / Extended
15	210	52.5		100	129	228	173	—	—	—
20	230	65		100						
25	230	70		100						
32	260	77.5		100						
40	260	85		100	128	226	185	157	256	214
50	300	90	97.5	100						
65	340	102.5	110	100	165	292	255	218	334	277
80	380	107.5	115	100	187	306	260	230	348	282
100	430	125	132.5	100	184	307	310	245	365	310
125	500	147.5	157.5	220	345	474		345	474	
150	550	172.5	177.5	220	351	480		351	480	
200	650	187.5	192.5	220	373	502		373	502	

ACTUATOR

TYPE	Ø D inches (mm)	E inches (mm)	F inches (mm)		THRUST AREA inches² (cm²)	THRUST VOLUME liter
			N.O.	N.C.		
AP23	230	245	135	85	203	~ 1.8
AP28	275	253			304	~ 3
AP34	342	276	185	85	475	~ 5.7
AP43	430	303	300	150	744	~ 11.5
AP45		393				
AP47		335	300	150		~ 13.5
AP48		570	490	490		
AP61	600	595	490	490	1690	~ 32
AP63	600	625	490	490	1690	~ 40

N.O. = Direct actuator - Normally Open Valve
N.C. = Reverse Actuator - Normally Closed Valve